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| 09/855,018 | 05/15/2001 | David Frank | 9351-60 | 8005 |

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| EXAMINER |
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TSANG FOSTER, SUSY N

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/855,018

Applicant(s)

FRANK ET AL.

Examiner

Susy N. Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/1/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed on 4/1/2005. Claim 3 has been cancelled. Claims 1, 2, 4-6, 9-11, and 14 have been amended. Claims 15-18 have been added. Claims 1, 2, and 4-18 are pending and are finally rejected for reasons of record and for reasons necessitated by applicant's amendment.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, an extension extending on the rear side of the flow field plate for each of the apertures as recited in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings show extensions (e.g. 210 in Figure 5 and 230 in Figure 9) around the apertures that are part of the front side of the flow field plate where the flow channels are located.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the extensions extending on the rear

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side of the flow field plate for each of the apertures as recited in claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings show extensions (e.g. 210 in Figure 5 and 230 in Figure 9) around the apertures that are part of the front side of the flow field plate where the flow channels are located.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the an extension extending on the rear side of the flow field plate for each of the apertures as recited in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: On page 7, the statement that “for each of the apertures, an aperture extension extending on the rear side of the flow field plate” does not appear to be illustrated in the drawings for reasons given above.

On page 8, paragraph 29, the statement that “on the rear side thereof, a first aperture extension” does not appear to be illustrated in the drawings for reasons given above.

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On page 8, paragraph 30, the statement that “on the rear side thereof, a second aperture extension” does not appear to be illustrated in the drawings for reasons given above.

Appropriate correction is required.

6. The amendment filed 4/1/2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

New replacement paragraph 20 contains new matter since the original disclosure does not show or mention a flow field plate for a fuel cell, the flow field plate having a front side, for defining chambers with another complementary flow field plate and a membrane electrode assembly. It is also unclear to the Examiner how the front surface of the flow field plate can define two chambers at the same time.

New replacement paragraph 24 contains new matter because the plurality of slots are not disposed adjacent to the extension on the rear side of the flow field plate because the extension is necessary to define the slots themselves. The extension is part of the formation of the slots as shown in Figure 5 of the instant application.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Objections

7. Claims 16-18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 16 does not further limit claim 9 because claim 9 is drawn to a fuel cell assembly and claim 16 is drawn to a flow field plate.

Claim 17 does not further limit claim 9 because claim 9 is drawn to a fuel cell assembly and claim 17 is drawn to a flow field plate.

Claim 18 does not further limit claim 11 because claim 11 is drawn to a fuel cell assembly and claim 18 is drawn to a flow field plate.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1, 2, 4-8, 10, 14, 15, 16, and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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In claims 1, 10, and 14, the limitation “the flow field plate having a front side, for defining chambers with another complementary flow field plate and a membrane electrode assembly” does not appear to be in the original disclosure. Furthermore, it is unclear how one side (the front side) of the flow field plate can define more than one chamber.

In claim 1, the limitation “the plurality of slots being disposed adjacent to the extension on the rear side of the flow field plate and adjacent to the reactant gas flow channels on the front side of the flow field plate” is new matter because the extension defines the plurality of slots as shown in the Figures of the instant application and the extension is not adjacent to the slots because it forms part of the slots because it defines the slots.

Similarly, in claim 10, the limitation “the at least one slot being disposed adjacent to the extension on the rear side of the flow field plate and adjacent to the reactant gas flow channels on the front side of the flow field plate” is new matter because the slot is not disposed adjacent to the extension but defined by the extension.

In claim 14, the limitation “wherein each of the plurality of slots is connected to more than one of the reactant gas flow channels” is not in the original disclosure. Instead, Figure 3 shows each slot connected to two reactant gas flow channels and Figure 7 shows each slot connected to three reactant gas flow channels. The new limitation reads on more than 3 gas flow channels and thus is not supported by the original disclosure.

In claim 15, the limitation “wherein each of the plurality of slots is connected to more than one of the reactant gas flow channels” is not supported by the original disclosure for the same reasons given for claim 14 above.

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In claim 16, the limitation “wherein each of the first slots is connected to more than one of the first reactant gas flow channels and each of the second slots is connected to more than one of the second reactant gas flows channels” is not supported by the original disclosure for the same reasons given for claim 14 above.

In claim 18, the limitation “wherein each of the first slots is connected to more than one of the first reactant gas flow channels and each of the second slots is connected to more than one of the second reactant gas flow channels” is not supported by the original disclosure for the same reasons given for claim 14 above.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1, 2, 4-8, 10-15, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, the limitation “wherein each extension is provided with a plurality of projections offset from the corresponding aperture for providing at least one of flow channels between the corresponding apertures and the plurality of slots, and structural support” is indefinite because it is unclear what the projections are supporting.

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In claims 1, 10, and 14, the limitation “the flow field plate having a front side, for defining chambers with another complementary flow field plate and a membrane electrode assembly” is indefinite because it is unclear how one side (the front side) of the flow field plate can define more than one chamber. In response to applicant’s arguments that one type of chamber refers to the network of sealing grooves and that the other type of chamber refers to the channels used for reactant gas flows, the examiner is not persuaded by this argument because the front surface of the flow field plates as required by the claims does not define another type of chamber involving the network of sealing grooves.

In claim 10, the limitation “wherein each extension is provided with a plurality of projections offset from the corresponding aperture, defining flow channels extending from the apertures to the at least one slots” is indefinite because it is unclear how the flow channels can extend from the aperture to the at least one slot if the projections are offset from the apertures.

Similarly, in claim 11, the limitation “wherein, on each of the first and second flow field plates, each of the first and second extensions is provided with a plurality of projections offset from the corresponding aperture, defining flow channels extending from the apertures to the respective first and second slots” is indefinite because it is unclear how the flow channels can extend from the aperture to the at least one slot if the projections are offset from the apertures.

Claims depending from claims rejected under 35 USC 112, second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. As best understood, claim 9 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Marvin et al. (US 6,500,580 B1).

In Figures 3 and 5 of Marvin, the reference shows in a flow field plate an aperture 40 that is clearly connected to the slot 68 through the extension located between the aperture 40 and the slot 68 as can be best seen in Figure 5. The extension is the portion of the flow field plate separating the aperture and the slot (See Figures 1-5; col. 2, lines 5-20; col. 3, lines 35-58; col. 4, lines 8-45; col. 5, lines 19-27 of the reference).

14. As best understood, claims 1, 2, 5-9, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Matlock et al. (US 6,261,711 B1).

With respect to Matlock et al., Figures 1-3 clearly meets the limitations of the instant claims. As shown in the flow field plate depicted in Figure 3, the slots are labeled by reference number 14. The extension is located between the aperture and the slots 14 ((See Figures 1-3, and 5; col. 3, lines 10-39; col. 4, lines 64-67; col. 5, lines 4-63; col. 7, lines 15-27 of the reference).

Figures 2, 3, and 5 specifically show the seal features of the flow field plate which clearly show sealing surfaces, seals, and grooves for the seals. Figures 2, 3, and 5 also show that in the

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sealing surface on the front side of the flow field plate, for each aperture, a first sealing surface portion encloses the corresponding aperture and separating the plurality of slots from the corresponding aperture and on the rear side of the flow field plate, a second sealing surface portion enclosing together the plurality of slots and the aperture.

15. As best understood, claims 1, 2, 5-9, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Yosida et al. (US 6,566,001 B2).

The slots of the flow field plate are best shown in Figure 4 depicted by reference label 64 and the extension is that portion of the flow field plate located between an aperture such as 36a and the slots 64 (See Figures 1-5; col. 3, lines 33-60; col. 4, lines 1-46 of the reference).

Response to Arguments

16. Applicant's arguments filed 4/1/2005 have been fully considered but they are not persuasive.

With respect to the drawings, the Examiner has not misinterpreted the Figures. Instead, the Examiner is concerned with the claim language which does not accurately reflect what is shown in the Figures. The Figures in the application do not show extensions on only the rear side of the flow field plate without the extensions also being part of the front side of the flow field plate.

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With respect to Marvin (Figure 3), Matlock (Figure 3), and Yosida (Figure 4) of record, applicant contends that all the references depict flow channels that directly connect to an aperture and that these flow channels then extend from the back of the flow field plate to the front of the flow field plate and connect, in a one to one fashion to reaction gas flow channels on the front of the flow field plate and that in each of these cited references, a much larger aperture is directly connected to the smaller sized channels and that none of the cited references in no way teaches or hints at using an extension as taught and claimed in the subject application.

In response, in Figures 3 and 5 of Marvin, the aperture 40 is clearly connected to the slot 68 through the extension located between the aperture 40 and the slot 68 as can be best seen in Figure 5. The extension is the portion of the flow field plate separating the aperture and the slot. There is no requirement in instant independent claims 1, 9-11, and 14 that the flow channels on the rear side of the flow field plate do not directly connect the aperture. The extension as shown in the instant application and defined in the claims is that portion of the flow field at the rear side thereof located between the aperture and the one or more slots.

With respect to Matlock et al., Figure 3 clearly meets the limitations of the instant claims. As shown in Figure 3, the slots are labeled by reference number 14. The extension is located between the aperture and the slots 14. There is no requirement in instant independent claims 1, 9-11, and 14 that the flow channels on the rear side of the flow field plate do not directly connect the aperture.

With respect to Yoshida, the slots are best shown in Figure 4 depicted by reference label 64 and the extension is that portion of the flow field plate located between an aperture such as

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36a and the slots 64. There is no requirement in instant independent claims 1, 9-11, and 14 that the flow channels on the rear side of the flow field plate do not directly connect the aperture.

These references clearly disclose an aperture extension between the apertures and the slots. The aperture extension in the references is that the portion of the flow field extending between the aperture and the slots and comprises the flow channels and projections enabling fluid communication between the aperture and the slots.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the extensions provide a gradual geometrical transition for the flow path that the reactant gas follows between the aperture and the corresponding slots) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Nonetheless, the figures of the present application do not provide support that the extensions provide a gradual geometrical transition for the flow path that the reactant gas follows between the aperture and the corresponding slots. The projections provided on the extension that are offset from the aperture do not provide this gradual geometrical transition. This offset geometry would suggest a sudden transition for the flow of gas between the aperture and the slots.

With respect to applicant's arguments for claims 10 and 11 that each of the extension is provided with a plurality of projections that are offset from the corresponding aperture and define flow channels that extend from the apertures to the plurality of slots, it is unclear how the projections that are offset from the corresponding aperture would be able to define flow channels

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that extend from the apertures to the plurality of slots because the offset would create a discontinuity. Applicant also argues that the flow channels stop short of the aperture (i.e. there is an aperture extension) which is in direct contrast to the flow channels shown in the cited features. In response, it appears to the Examiner that applicant is redefining the aperture extension to be the part of the flow field plate located between the aperture and slots that do not contain any flow channels on the rear side of the flow field plate. However, this redefinition does not appear to make sense since the projections are provided on the extension itself so that the flow channels are located on parts of the extension of the aperture.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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18. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/



SUSY TSANG-FOSTER
PRIMARY EXAMINER